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Exercise - I (Conceptual Questions) Build Up Your Understanding

REFLECTION OF LIGHT AT PLANE SURFACE

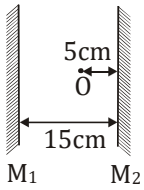
1. When a ray of light is incident normally on a plane mirror then the angle of reflection will be
(1) 0° (2) 90° (3) 180° (4) – 90°

2. A ray is incident at 30° angle on plane mirror. What will be deviation after reflection from mirror.
(1) 120° (2) 60° (3) 30° (4) 45°

3. Two plane mirrors are lying perpendicular to each other, there is lamp in between mirrors. Then number of images of lamp will be
(1) 3 (2) 4 (3) 5 (4) 6

4. A man runs towards stationary plane mirror at a speed of 15 m/s. What is the speed of his image with respect to mirror :–
(1) 7.5 m/s (2) 15 m/s
(3) 30 m/s (4) 45 m/s

5. Figure shows two plane mirrors parallel to each other and an object O placed between them. Then the distance of the first three images from the mirror M_2 will be :(in cm)



(1) 5, 10, 15 (2) 5, 15, 30
(3) 5, 25, 35 (4) 5, 15, 25

6. A ray gets successively reflection from two mirrors inclined at an angle of 40°. If the angle of incidence on the first mirror is 30° then the net deviation of this ray after two reflections.
(1) 40° (2) 280° (3) 90° (4) 240°

7. A tall man of height 6 feet, want to see his full image. Then required minimum length of the mirror will be :-
(1) 12 feet (2) 3 feet
(3) 6 feet (4) Any length

8. A man is 180 cm tall and his eyes are 10 cm below the top of his head. In order to see his entire height right from toe to head, he uses a plane mirror kept at a distance of 1 m from him. The minimum length of the plane mirror required is
(1) 180 cm (2) 90 cm
(3) 85 cm (4)170 cm

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9. Two plane mirrors are at 45° to each other. If an object is placed between them then the number of images will be
(1) 5 (2) 9 (3) 7 (4) 8

REFLECTION AT SPHERICAL SURFACE

10. The focal length of a concave mirror is 50 cm. where an object be placed so that its image is two times magnified, real and inverted -
(1) 75 cm (2) 72 cm
(3) 63 cm (4) 50 cm

11. An object of height 7.5 cm is placed in front of a convex mirror of radius of curvature 25 cm at a distance of 40 cm. The height of the image should be -
(1) 2.3 cm (2) 1.78 cm
(3) 1 cm (4) 0.8 cm

12. A square of side 3 cm is placed at a distance of 25 cm from a concave mirror of focal length 10 cm. The centre of the square is at the axis of the mirror and the plane is normal to the axis. The area enclosed by the image of the wire is -
(1) 4 cm^2 (2) 6 cm^2
(3) 16 cm^2 (4)36 cm^2

13. The focal length of a concave mirror is 12 cm. Where should an object of height 4 cm be placed, so that a real image of 1 cm height is formed ?
(1) 48 cm (2) 3 cm
(3) 60 cm (4) 15 cm

14. An object is lying at a distance of 90 cm from a concave mirror of focal length 30 cm. The position and nature of image formed by it will be
(1) 45 cm, of the size of object
(2) 90 cm, smaller than object
(3) 30 cm, bigger than object
(4) – 45 cm smaller than object

15. An object of height 1.5 cm is situated at a distance of 15 cm from a concave mirror. The concave mirror forms its real image of height 3.0 cm. The focal length of concave mirror will be
(1) – 10 cm (2) – 20 cm
(3) 20 cm (4) 30 cm

16. A boy stands straight infront of a mirror at a distance of 30 cm away from it. He sees his erect image whose height is $1/5^{th}$ of his real height. The mirror he is using is -
(1) Plane mirror (2) Convex mirror
(3) Concave mirror (4) None

17. A point object is moving on the principal axis of a concave mirror of focal length 24 cm towards the mirror. When it is at a distance of 60 cm from the mirror, its velocity is 9 cm/sec. What is the velocity of the image at that instant -
(1) 5 cm/sec. (2) 12 cm/sec
(3) 4 cm/sec (4) 9 cm/sec

18. A concave mirror gives an image three times as large as the object placed at a distance of 20 cm from it. For the image to be real, the focal length should be -
(1) –10 cm (2) –15 cm
(3) –20 cm (4) –30 cm

19. The minimum distance between the object and its real image for concave mirror is
(1) f (2) 2f (3) 4f (4) Zero

20. A convex mirror has a radius of curvature of 22 cm. If an object is placed 14 cm away from the mirror then its image is formed at-
(1) 6.2 cm on the front side of the mirror
(2) 6.2 cm on the back side of the mirror.
(3) 51.3 cm on the front of the mirror.
(4) 51.3 cm on the back side of the mirror.

21. The focal length of a spherical mirror is :-
(1) Maximum for red light
(2) Maximum for blue light
(3) Maximum for white light
(4) Same for all lights

22. A point object is placed at a distance of 10 cm and its real image is formed at a distance of 20 cm from a concave mirror. If the object is moved by 0.1 cm towards the mirror, the image will shift by about.
(1) 0.4 cm away from the mirror
(2) 0.4 cm towards the mirror
(3) 0.8 cm away from the mirror
(4) 0.8 cm towards the mirror

23. The focal length of a convex mirror is 20 cm its radius of curvature will be
(1) 10 cm (2) 20 cm
(3) 30 cm (4) 40 cm

24. A diminished virtual image can be formed only in
(1) Plane mirror (2) A concave mirror
(3) A convex mirror (4) None

REFRACTION AT PLANE SURFACE : SNELL'S LAWS TIR

25. The colour are characterised by which of following character of light-
(1) Frequency (2) Amplitude
(3) Wavelength (4) Velocity

26. The wavelength of light in two liquids 'x' and 'y' is 3500 Å and 7000Å, then the critical angle will be
(1) 60° (2) 45°
(3) 30° (4) 15°

27. A microscope is focused on a mark, then a glass slab of refractive index 1.5 and thickness of 6 cm is placed on the mark to get the mark again in focus, the microscope should be moved
(1) 4 cm (2) 2 cm (3) 6 cm (4) 8 cm

28. Velocity of light in glass, whose refractive index w.r.t. air is 1.5, is 2×10^8 m/Sec. In a certain liquid the velocity of light is found to be 2.5×10^8 m/Sec. The refractive index of liquid w.r.t. air is
(1) 0.64 (2) 0.80 (3) 1.20 (4) 1.44

29. A point source of light is place 4 m below the surface of water of refractive index 5/3. The minimum diameter of a disc which should be placed over the source on the surface of water to cut-off all light coming out of water is.
(1) 2 m (2) 6 m (3) 4 m (4) 3 m

30. When a ray of light enters a medium of refractive index μ, it is observed that the angle of refraction is half of the angle of incidence is than angle of incidence is
(1) $2\cos^{-1}(\mu/2)$ (2) $\cos^{-1}(\mu/2)$
(3) $2\cos^{-1}(\mu)$ (4) $2\sin^{-1}(\mu/2)$

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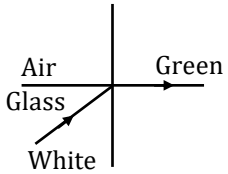
31. White light is incident on the interface of glass and air as shown in the figure. If green light is just totally internally reflected then the emerging ray in air contains



(1) Yellow, orange, red
(2) Violet, indigo, blue
(3) All colours
(4) All colours except green

32. A plane glass slab is kept over various coloured letters; the letter which appears least raised is
(1) blue (2) voilet (3) green (4) red

33. A bubble in glass slab ($\mu = 1.5$) when viewed from one side appears at 5 cm and 2cm from other side, then thickness of slab is:-
(1) 3.75 cm (2) 3 cm
(3) 10.5 cm. (4)2.5 cm

34. A ray of light travelling in air have wavelength λ , frequency n, velocity V and intensity I. If this ray enters into water than these parameters are λ' , n', v' and I' respectively. Which relation is correct from following-
(1) $\lambda = \lambda'$ (2) n = n' (3) v = v' (4) I = I'

35. Light travels through a glass plate of thickness t and having refractive index n. If c is the velocity of light in vacuum. the time taken by the light to travel this thickness of glass is
(1) $\frac{t}{nc}$ (2) tnc (3) $\frac{nt}{c}$ (4) $\frac{tc}{n}$

36. A ray of light propagates from glass (refractive index = 3/2) to water (refractive index = 4/3). The value of the critical angle
(1) $\sin^{-1}(1/2)$ (2) $\sin^{-1}\left(\frac{\sqrt{8}}{9}\right)$
(3) $\sin^{-1}(8/9)$ (4) $\sin^{-1}(5/7)$

37. Relation between critical angles of water and glass is
(1) $C_w > C_g$ (2) $C_w < C_g$
(3) $C_w = C_g$ (4) $C_w = C_g = 0$

38. Critical angle of light passing from glass to air is minimum for
(1) Red (2) Green
(3) Yellow (4) Violet

39. Which of the following is used in optical fibres
(1) T.I.R. (2) Scattering
(3) Diffraction (4) Refraction

40. Brilliance of diamond is due to
(1) Shape (2) Cutting
(3) Reflection (4) T.I.R.

41. 'Mirage' is a phenomenon due to
(1) Reflection of light
(2) Refraction of light
(3) T.I.R. of light
(4) Diffraction of light

42. An object is immersed in a fluid. In order that the object becomes invisible, it should.
(1) Bahave as a perfect reflector
(2) Absorb all light falling on it
(3) Have refractive index one
(4) Have refractive index exactly matching with that of the surrounding fluid

PRISM & DISPERSION

43. The angle of a glass prism is 4.5° and its refractive index is 1.52. The angle of minimum deviation will be –
(1) 1.5° (2) 2.3° (3) 4.5° (4) 2°

44 A ray of light passes through equilateral Prism (μ =1.5) such that angle of incidence is equal to angle of emergence and the later is equal to 3/4th of Prism angle. The angle of deviation is
(1) 60° (2) 30° (3) 45° (4) 120°

45. Prism angle of glass prism is 10°. It's refractive index of red and violet colour is 1.51 and 1.52 respectively. Then its dispersive power will be.
(1) 0.015 (2) 0.020
(3) 0.011 (4) 0.019

46. If the refractive indices of crown glass for red, yellow and violet colours are 1.5140, 1.5170 and 1.5318 respectively and for flint glass these are 1.6434, 1.6499 and 1.6852 respectively, then the dispersive powers for crown and flint glass are respectively.
(1) 0.034 and 0.064 (2) 0.064 and 0.034
(3) 1.00 and 0.064 (4) 0.034 and 1.0

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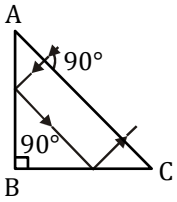
47. A thin Prism P_1 with angle 4° and made from glass of refractive index 1.54 is combined with another thin Prism P_2 made from glass of refractive index 1.72 to produce dispersion without deviation. The angle of Prism P_2 is
(1) 5.33° (2) 4° (3) 3° (4) 2.6°

48. The angle of minimum deviation measured with a prism is 30° and the angle of prism is 60°. The refractive index of prism material is -
(1) $\sqrt{2}$ (2) 2 (3) $\frac{3}{2}$ (4) $\frac{4}{3}$

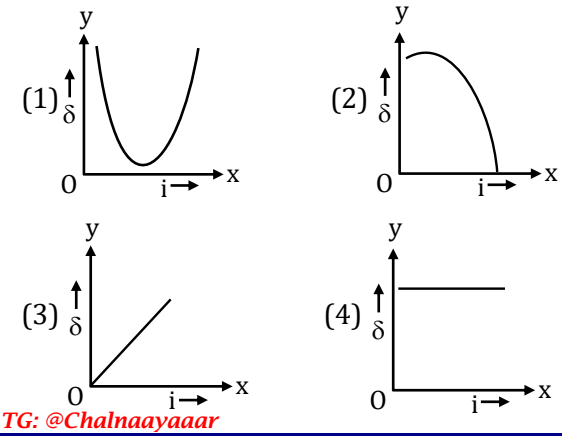
49. Angle of prism is A and its one surface is silvered. Light rays falling at an angle of incidence 2A on first surface return back through the same path after suffering reflection at second silvered surface. Refractive index of the material of prism is
(1) 2 sin A (2) 2 cos A
(3) $\frac{1}{2}$ cosA (4) tanA

50. A ray falls on a prism ABC (AB = BC) and travels as shown in figure. The minimum refractive index of the prism material should be



(1) $\frac{4}{3}$ (2) $\sqrt{2}$ (3) 1.5 (4) $\sqrt{3}$

51. For a prism, graph between angle of deviation (δ) and angle of incidence will be



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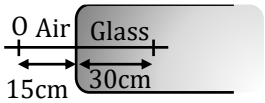
52. Three prisms 1,2 and 3 have the prism angle A = 60°, but their refractive indices are respectively 1.4, 1.5 and 1.6. If δ_1, δ_2,δ_3, be their respective angles of deviation then :–
(1) $\delta_3 > \delta_2 > \delta_1$ (2) $\delta_1 > \delta_2 > \delta_3$
(3) $\delta_1 = \delta_2 = \delta_3$ (4) $\delta_2 > \delta_1 > \delta_3$

53. Rainbow is formed due to :-
(1) Scattering & refraction
(2) Internal reflection & dispersion
(3) Reflection only
(4) Diffraction and dispersion

54. The refractive index of the material of a prism is $\sqrt{2}$ and its refracting angle is 30°. One of the refracting surfaces of the prism is silvered. A beam of monochromatic light entering the prism from the other face will retrace its path after reflection from the silvered surface if its angle of incidence on the prism is :–
(1) 60° (2) 0° (3) 30° (4) 45°

REFRACTION AT SPHERICAL SURFACES

55. A point object O is placed in front of a glass rod having spherical end of radius of curvature 30 cm. The image formed would be



(1) 30 cm left (2) infinity
(3) 1 cm to the right (4) 18 cm to the left

56. A spherical surface of radius of curvature R separates air (refractive index 1.0) from glass (refractive index 1.5). The centre of curvature is in glass. A point object P placed in air is found to have a real image Q in the glass. The line PQ cuts the surface at a point O and PO = OQ. The distance PO is equal to
(1) R (2) 3 R (3) 2 R (4) 5 R

LENSES

57. Two convex lens of focal length 20 cm and 25 cm are placed in contact with each other, then power of this combination is –
(1) + 1 D (2) + 9 D
(3) – 1 D (4) – 9 D

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58. Two lenses of power +2.50 D and –3.75 D are combined to form a compound lens. Its focal length in cm will be -
(1) 40 (2) –40 (3) –80 (4) 160

59. Lenses of powers 3D and –5D are combined to form a compound lens. An object is placed at a distance of 50 cm from this lens. Calculate the position of its image.
(1) –10 cm (2) +10 cm
(3) –25 cm (4) + 25 cm.

60. A convex lens of Focal length of 40cm is in contact with a concave lens of focal length 25cm. The power of the combination is.
(1) –1.5 D (2) -6.5 D
(3) +6.5 D (4) +6.67 D

61. An object is put at a distance of 5 cm from the first focus of a convex lens of focal length 10cm. If a real image is formed it's distance from the lens will be :-
(1) 15 cm (2) 20 cm
(3) 25 cm (4) 30 cm

62. An equiconvex lens has a power of 5 dioptre. If it is made of glass of refractive index 1.5. then radius of curvature of its each surface will be ?
(1) 20 cm (2) 10 cm (3) 40 cm (4) ∞

63. An object placed at a distance of 9cm from first principal focus of convex lens, produces a real image at a distance of 25cm from its second principal focus. Then focal length of lens is
(1) 9 cm (2) 25 cm
(3) 15 cm (4) 17 cm

64. A glass convex lens (μ_g = 1.5) has a focal length of 8 cm when placed in air. What would be the focal length of the lens when it is immersed in water (μ_w = 1.33)
(1) 2 m (2) 4 cm
(3) 16 cm (4) 32 cm

65. Two thin convex lenses of focal length 10 cm and 15 cm are separated by a distance of 10 cm. The focal length of the combination is :-
(1) 4.2 cm (2) 6 cm
(3) 10 cm (4) 15 cm

66. A convex lens of power P is immersed in water. how will its power change ?
(1) Increases
(2) Decreases
(3) Remains unchanged
(4) Increases for red colour and decreases for blue colour

67. A convex lens is made up of three different materials as shown in the figure. For a point object placed on its axis, the number of images formed are

(1) 1 (2) 3 (3) 4 (4) 5

68. The focal length of a convex lens is 10 cm and its refractive index is 1.5. If the radius of curvature of one surface is 7.5 cm, the radius of curvature of the second surface will be
(1) 7.5 cm (2) 15.0 cm
(3) 75 cm (4)5.0 cm

69. A plano convex lens (μ = 1.5) has radius of curvature 10 cm. It is silvered on its plane surface. Find focal length after silvering:-
(1) 10 cm (2) 20 cm
(3) 15 cm (4) 25 cm

70. A plano convex lens is made of refractive index 1.6. The radius of curvature of the curved surface is 60 cm. The focal length of the lens is
(1) 50 cm (2) 100 cm
(3) 200 cm (4) 400 cm

71. If in a plano-convex lens. the radius of curvature of the convex surface is 10 cm and the focal length of the lens is 30 cm, then the refractive index of the material of lens will be
(1) 1.5 (2) 1.66 (3) 1.33 (4) 3

72. If a convex lens of focal length 80 cm and a concave lens of focal length 50 cm are combined together, what will be their resulting power
(1) + 6.5 D (2) – 6.5 D
(3) + 7.5 D (4) –0.75 D

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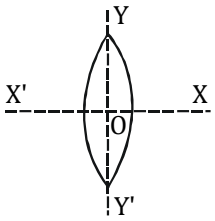
73. A convex lens is dipped in a liquid whose refractive index is equal to the refractive index of the lens. Then its focal length will :-
(1) Become zero
(2) Become infinite
(3) Become small, but non–zero
(4) Remain unchanged

74. An equiconvex lens is cut into two halves along (i) XOX′ and (ii) YOY′ as shown in the figure. Let f, f′, f″ be the focal lengths of the complete lens, of each half in case (i), and of each half in case (ii), respectively Choose the correct statement from the following :–



(1) f′ = f, f″ = 2f (2) f′ = 2f, f″ = f
(3) f′ = f, f″ = f (4) f′ = 2f, f″ = 2f

75. An object and its real image are located at distances 25 cm and 40 cm respectively from the two principal focii of a convex lens. The linear magnification of the image is near to
(1) + 1.3 (2) –1.3
(3) + 1.8 (4) –1.8

CHROMATIC & SPHERICAL ABERRATIONS

76. Lenses applied in achromatic combination having dispersive power in ratio of 5:3 if focal length of concave lens is 15 cm, then focal length of other lens will be :
(1) –9 cm (2) +9 cm
(3) –12 cm (4) +12 cm

77. If the magnitude of dispersive powers of two lenses are 0.024 and 0.036. Then their focal lengths will be for aberration free combination.
(1) 30 cm, –40 cm
(2) 30 cm, –45 cm
(3) 10 cm, 30 cm
(4) 20 cm, –35 cm

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78. An achromatic convergent doublet of two lenses in contact has a power of +2D. The convex lens has a power +5D. What is the ratio of the dispersive powers of the convergent and divergent lenses.
(1) 2 : 5 (2) 3 : 5 (3) 5 : 2 (4) 5 : 3

79. The dispersive powers of the materials of the two lenses are in the ratio 4 : 3. If the achromatic combination of these two lenses in contact is a convex lens of focal length 60 cm then the focal lengths of the component lenses are
(1) –20 cm and 25 cm
(2) 20 cm and –25 cm
(3) –15 cm and 40 cm
(4) 15 cm and –20 cm

80. Two lenses of focal length +10 cm and –15 cm when put in contact behave like a convex lens. They will have zero longitudinal chromatic aberration if their dispersive powers are in the ratio
(1) +3/2 (2) +2/3
(3) –3/2 (4) –2/3

81. Refractive index of violet, yellow and Red colour of light for a material of lens are 1.66, 1.64 & 1.62 respectively. If mean focal length of lens is 10cm Then chromatic aberration between the colour of violet and red will be
(1) 0.625 cm (2) 0.125 m
(3) .02 cm (4) 0 cm

MICROSCOPES AND TELESCOPES

82. The focal length of convex lens is 2.5 cm. Its magnifying power for minimum distance of distinct vision will be -
(1) 25 (2) 52 (3) 11 (4) 1.1

83. An astronomical telescope of magnifying power 8 is made using two lenses spaced 45 cm apart. The focal length of the lenses used are
(1) f = 40 cm, f = 5 cm
(2) f = 8 cm, f = 5 cm
(3) f = 5 cm, f = 47 cm
(4) f = 20 cm, f = 5 cm

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84. The magnifying power of the objective of a compound microscope is 7 if the magnifying power of the microscope is 35, then the magnifying power of eyepiece will be -
(1) 245 (2) 5 (3) 28 (4) 42

85. An astronomical telescope has focal lengths 100 m and 10 cm of objective and eyepiece lens respectively when final image is formed at least distance of distinct vision, magnification power of telescope will be :
(1) –10 (2) –11 (3) –14 (4) –15

86. If tube length of astronomical telescope is 105 cm and magnifying power is 20 for normal setting. Calculate the focal length of objective.
(1) 100 cm (2) 10 cm
(3) 20 cm (4) 25 cm

87. Least distance of distinct vision is 25 cm, what will be Magnifying power of simple microscope of focal length 5 cm, if final image is formed at minimum distance of distinct vision –
(1) $\frac{1}{5}$ (2) 5 (3) $\frac{1}{6}$ (4) 6

88. In a compound microscope, the intermediate image, in normal use is
(1) Virtual, erect and magnified
(2) Real, erect and magnified
(3) Real, inverted and magnified
(4) Virtual, inverted and magnified

89. The focal lengths of the objective and eye-piece of a telescope are respectively 100 cm and 2 cm. The moon subtends an angle of 0.5° at the eye. If it is looked through the telescope, the angle subtended by the moon's image will be
(1) 100° (2) 50° (3) 25° (4) 10°

90. In a laboratory four convex lenses L_1, L_2, L_3 and L_4 of focal lengths 2,4,6 and 8 cm respectively are available. Two of these lenses form a telescope of length 10 cm and magnifying power 4. The objective and eye lenses are
(1) L_2 , L_3 (2) L_1 , L_4
(3) L_3 , L_2 (4) L_4 , L_1

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91. The magnifying power of a simple microscope is 6. The focal length of its lens in metres will be, if least distance of distinct vision is 25 cm
(1) 0.05 (2) 0.06 (3) 0.25 (4) 0.12

92. An astronomical telescope has a magnifying power 10. The focal length of eyepiece is 20 cm. The focal length of objective is
(1) 2 cm (2) 200cm
(3) $\frac{1}{2}$ cm (4) $\frac{1}{200}$ cm

93. A telescope has an objective lens of focal length 200 cm and an eye piece with focal length 2cm. If this telescope is used to see a 50 meter tall building at a distance of 2km, what is the height of the image of the building formed by the objective lens
(1) 5 cm (2) 10 cm (3) 1 cm (4) 2 cm

DEFECTS OF VISION

94. Minimum and maximum distance should be for clear vision of healthy eye
(1) 100 cm & 500 cm (2) Infinite & 25 cm
(3) 25 cm & 100 cm (4) 25 cm & infinite

95. A person can see clearly only upto a distance of 25 cm. He wants to read a book placed at a distance of 50 cm. What kind of lens does he require for his spectacles and what must be its power ?
(1) Concave, – 1.0 D (2) Convex, + 1.5 D
(3) Concave, – 2.0 D (4) Convex, + 2.0 D

96. A person can not see the objects beyond 50 cm. The power of a lens to correct this vision will be-
(1) +2D (2) –2D
(3) +5D (4) 0.5 D

97. A myopic person can not see objects lying beyond 2 m. The focal length and power of the lens required to remove this defect will be -
(1) 1 m & 0.5 D (2) – 2 m & – 0.5 D
(3) 0.5 m & 0.5 D (4) – 0.5 m & 0.5 D

98. To remove myopia (short sightedness) a lens of power 0.66D is required. The distant point of the eye is approximately
(1) 100 cm (2) 151.5 cm
(3) 50 cm (4) 25 cm

99. A person can not see the objects clearly placed at a distance more than 40 cm. He is advised to use a lense of power

(1) – 2.5 D (2) + 2.5 D

(3) – 6.25 D (4) + 1.5 D

100. A man cannot see clearly the objects beyond a distance of 20 cm from his eyes. To see distant objects clearly he must use which kind of lenses and of what focal length

(1) 10 cm convex (2) 100 cm concave

(3) 20 cm convex (4) 20 cm concave

EXERCISE-I (Conceptual Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	1	1	1	2	3	2	2	2	3	1	2	1	3	4	1
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	2	3	2	4	2	4	1	4	3	1	3	2	3	2	1
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	1	4	3	2	3	3	1	4	1	4	3	4	2	2	4
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	1	3	1	2	2	1	1	2	4	1	4	2	3	3	1
Question	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Answer	4	1	3	4	3	2	2	2	1	2	3	4	2	1	2
Question	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Answer	2	2	2	4	2	1	3	1	2	3	1	4	3	3	4
Question	91	92	93	94	95	96	97	98	99	100					
Answer	1	2	1	4	3	2	2	2	1	4					

TG: @Chalnaayaaar

TG: @Chalnaayaaar

Exercise - II (Previous Year Questions) AIPMT/NEET

AIPMT 2006

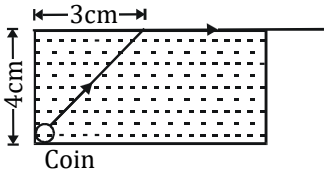
1. A microscope is focussed on a mark on a piece of paper and then a slab of glass of thickness 3 cm and refractive index 1.5 is placed over the mark. How should the microscope be moved to get the mark in focus again :-
(1) 1 cm upward
(2) 4.5 cm downward
(3) 1 cm downward
(4) 2 cm upward

2. A convex lens and a concave lens, each having same focal length of 25 cm, are put in contact to form a combination of lenses. The power in diopters of the combination is :-
(1) 25 (2) 50 (3) Infinite (4) Zero

AIPMT 2007

3. The frequency of a light wave in a material is 2×10^{14} Hz and wavelength is 5000 Å. The refractive index of material will be :
(1) 1.33 (2) 1.40 (3) 1.50 (4) 3.00

4. A small coin is resting on the bottom of a beaker filled with a liquid. A ray of light from the coin travels upto the surface of the liquid and moves along its surface (see figure).



How fast is the light travelling in the liquid ?
(1) 1.2×10^8 m/s (2) 1.8×10^8 m/s
(3) 2.4×10^8 m/s (4) 3.0×10^8 m/s

AIPMT 2008

5. Two thin lenses of focal lengths f_1 and f_2 are in contact and coaxial. The power of the combination is :-
(1) $\frac{f_1+f_2}{2}$ (2) $\frac{f_1+f_2}{f_1 f_2}$
(3) $\sqrt{\frac{f_1}{f_2}}$ (4) $\sqrt{\frac{f_2}{f_1}}$

TG: @Chalnaayaaar

AIPMT (Pre) 2010

6. A lens having focal length f and aperture of diameter d forms an image of intensity I. Aperture of diameter $\frac{d}{2}$ in central region of lens is covered by a black paper. Focal length of lens and intensity of image now will be respectively :-
(1) $\frac{f}{2}$ and $\frac{I}{2}$ (2) f and $\frac{I}{4}$
(3) $\frac{3f}{4}$ and $\frac{I}{2}$ (4) f and $\frac{3I}{4}$

7. A ray of light travelling in a transparent medium of refractive index μ, falls on a surface separating the medium from air at an angle of incidence of 45°. For which of the following value of μ the ray can undergo total internal reflection ?
(1) μ = 1.25 (2) μ = 1.33
(3) μ = 1.40 (4) μ = 1.50

AIPMT (Mains) 2010

8. The speed of light in media M_1 and M_2 is 1.5×10^8 m/s and 2.0×10^8 m/s respectively. A ray of light enters from medium M_1 to M_2 at an incidence angle i. If the ray suffers total internal reflection, the value of i is :-
(1) Equal to or less than $\sin^{-1}\left(\frac{3}{5}\right)$
(2) Equal to or greater than $\sin^{-1}\left(\frac{3}{4}\right)$
(3) Less than $\sin^{-1}\left(\frac{2}{3}\right)$
(4) Equal to $\sin^{-1}\left(\frac{2}{3}\right)$

9. A ray of light is incident on a 60° prism at the minimum deviation position. The angle of refraction at the first face (i.e., incident face) of the prism is:-
(1) 30° (2) 45°
(3) 60° (4) Zero

AIPMT (Pre) 2011

10. Which of the following is not due to total internal reflection ?
(1) Working of optical fibre
(2) Difference between apparent and real depth of a pond
(3) Mirage on hot summer days
(4) Brilliance of diamond

11. A biconvex lens has a radius of curvature of magnitude 20 cm. Which one of the following options describe best the image formed of an object of height 2 cm placed 30 cm from the lens ? (μ = 1.5)
(1) Virtual, upright, height = 1 cm
(2) Virtual, upright, height = 0.5 cm
(3) Real, inverted, height = 4 cm
(4) Real, inverted, height = 1 cm

AIPMT (Mains) 2011

12. A thin prism of angle 15° made of glass of refractive index μ_1 = 1.5 is combined with another prism of glass of refractive index μ_2 = 1.75. The combination of the prisms produces dispersion without deviation. The angle of the second prism should be :-
(1) 5° (2) 7° (3) 10° (4) 12°

AIPMT (Pre) 2012

13. The magnifying power of a telescope is 9. When it is adjusted for parallel rays, the distance between the objective and eyepiece is 20 cm. The focal length of lenses are :
(1) 18 cm, 2 cm (2) 11 cm, 9 cm
(3) 10 cm, 10 cm (4) 15 cm, 5 cm

14. A ray of light is incident at an angle of incidence, i, on one face of a prism of angle A (assumed to be small) and emerges normally from the opposite face. If the refractive index of the prism is μ, the angle of incidence i, is nearly equal to :
(1) A/μ (2) A/2μ
(3) μA (4) $\frac{\mu A}{2}$

TG: @Chalnaayaaar

15. A concave mirror of focal length 'f_1' is placed at a distance of 'd' from a convex lens of focal length 'f_2'. A beam of light coming from infinity and falling on this convex lens-concave mirror combination returns to infinity. The distance 'd' must equal :
(1) $2f_1 + f_2$ (2) $-2f_1 + f_2$
(3) $f_1 + f_2$ (4) $-f_1 + f_2$

16. When a biconvex lens of glass having refractive index 1.47 is dipped in a liquid, it acts as a plane sheet of glass. This implies that the liquid must have refractive index.
(1) greater than that of glass
(2) less than that of glass
(3) equal to that of glass
(4) less than one

AIPMT (Mains) 2012

17. A rod of length 10 cm lies along the principal axis of a concave mirror of focal length 10 cm in such a way that its end closer to the pole is 20 cm away from the mirror. The length of the image is :-
(1) 2.5 cm (2) 5 cm
(3) 10 cm (4) 15 cm

18. For the angle of minimum deviation of a prism to be equal to its refracting angle, the prism must be made of a material whose refractive index :-
(1) is less than 1
(2) is greater than 2
(3) lies between $\sqrt{2}$ and 1
(4) lies between 2 and $\sqrt{2}$

NEET-UG 2013

19. A plano convex lens fits exactly into a plano concave lens. Their plane surfaces are parallel to each other. If lenses are made of different materials of refractive indices μ_1 curved surface of the lenses, then the focal length of combination is
(1) $\frac{2R}{(\mu_2 - \mu_1)}$ (2) $\frac{R}{2(\mu_1 + \mu_2)}$
(3) $\frac{R}{2(\mu_1 - \mu_2)}$ (4) $\frac{R}{(\mu_1 - \mu_2)}$

TG: @Chalnaayaaar

20. For a normal eye, the cornea of eye provides a converging power of 40 D and the least converging power of the eye lens behind the cornea is 20 D. Using this information, the distance between the retina and the cornea eye lens can be estimated to be -

(1) 1.5 cm (2) 5 cm

(3) 2.5 cm (4) 1.67 cm

AIPMT 2014

21. If the focal length of objective lens is increased then magnifying power of :-

(1) microscope will increase but that of telescope decrease.

(2) microscope and telescope both will increase.

(3) microscope and telescope both will decrease

(4) microscope will decrease but that of telescope increase.

22. The angle of a prism is 'A'. One of its refracting surfaces is silvered. Light rays falling at an angle of incidence 2A on the first surface returns back through the same path after suffering reflection at the silvered surface. The refractive index μ, of the prism is :-

(1) 2sinA (2) 2cos A

(3) $\frac{1}{2}$ cosA (4) tanA

AIPMT 2015

23. The refracting angle of a prism is A, and refractive index of the material of the prism is cot(A/2). The angle of minimum deviation is :-

(1) 180° – 2A (2) 90° – A

(3) 180° + 2A (4) 180° – 3A

24. Two identical thin plano-convex glass lenses (refractive index 1.5) each having radius of curvature of 20 cm are placed with their convex surfaces in contact at the centre. The intervening space is filled with oil of refractive index 1.7. The focal length of the combination is :-

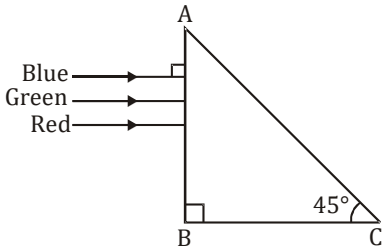
(1) –25 cm (2) –50 cm

(3) 50 cm (4) –20 cm

TG: @Chalnaayaaar

Re-AIPMT 2015

25. A beam of light consisting of red, green and blue colours is incident on a right angled prism. The refractive index of the material of the prism for the above red, green and blue wavelengths are 1.39, 1.44 and 1.47, respectively.



The prism will :-

(1) separate the red colour part from the green and blue colours

(2) separate the blue colour part from the red and green colours

(3) separate all the three colours from one another

(4) not separate the three colours at all

NEET-I 2016

26. The angle of incidence for a ray of light at a refracting surface of a prism is 45°. The angle of prism is 60°. If the ray suffers minimum deviation through the prism, the angle of minimum deviation and refractive index of the material of the prism respectively, are :

(1) 45°, $\frac{1}{\sqrt{2}}$ (2) 30°, $\sqrt{2}$

(3) 45°, $\sqrt{2}$ (4) 30°, $\frac{1}{\sqrt{2}}$

27. An astronomical telescope has objective and eyepiece of focal lengths 40 cm and 4 cm respectively. To view an object 200 cm away from the objective, the lenses must be separated by a distance :-

(1) 37.3 cm (2) 46.0 cm

(3) 50.0 cm (4) 54.0 cm

28. Match the corresponding entries of **column-1** with **coloumn-2** (Where m is the magnification produced by the mirror) :-

Column-1	Column-2
(A) m = –2	(a) Convex mirror
(B) m = $-\frac{1}{2}$	(b) Concave mirror
(C) m = +2	(c) Real image
(D) m = $+\frac{1}{2}$	(d) Virtual image

(1) A → b and c, B → b and c, C → b and d, D → a and d.
(2) A → a and c, B → a and d, C → a and b, D → c and d
(3) A → a and d, B → b and c, C → b and d, D → b and c
(4) A → c and d, B → b and d, C → b and c, D → a and d

NEET-II 2016

29. Two identical glass (μ_g = 3/2) equiconvex lenses of focal length f each are kept in contact. The space between the two lenses is filled with water (μ_w = 4 / 3). The focal length of the combination is :-
(1) 4f/3 (2) 3f/4 (3) f/3 (4) f

30. An air bubble in a glass slab with refractive index 1.5 (near normal incidence) is 5 cm deep when viewed from one surface and 3 cm deep when viewed from the opposite face. The thickness (in cm) of the slab is :-
(1) 12 (2) 16 (3) 8 (4) 10

31. A person can see clearly objects only when they lie between 50 cm and 400 cm from his eyes. In order to increase the maximum distance of distinct vision to infinity, the type and power of the correcting lens, the person has to use, will be:-
(1) concave, – 0.2 diopter
(2) convex, + 0.15 diopter
(3) convex, + 2.25 diopter
(4) concave, – 0.25 diopter

TG: @Chalnaayaaar

NEET(UG) 2017

32. A beam of light from a source L is incident normally on a plane mirror fixed at a certain distance x from the source. The beam is reflected back as a spot on a scale placed just above the source L. When the mirror is rotated through a small angle θ, the spot of the light is found to move through a distance y on the scale. The angle θ is given by :-
(1) $\frac{y}{x}$ (2) $\frac{x}{2y}$ (3) $\frac{x}{y}$ (4) $\frac{y}{2x}$

33. A thin prism having refracting angle 10° is made of glass of refractive index 1.42. This prism is combined with another thin prism of glass of refractive index 1.7. This combination produces dispersion without deviation. The refracting angle of second prism should be :-
(1) 6° (2) 8° (3) 10° (4) 4°

NEET(UG) 2018

34. The refractive index of the material of a prism is and the angle of the prism is 30°. One of the two refracting surfaces of the prism is made a mirror inwards, by silver coating. A beam of monochromatic light entering the prism from the other face will retrace its path (after reflection from the silvered surface) if its angle of incidence on the prism is :-
(1) 60° (2) 45° (3) 30° (4) zero

35. An object is placed at a distance of 40 cm from a concave mirror of focal length 15 cm. If the object is displaced through a distance of 20 cm towards the mirror, the displacement of the image will be:-
(1) 30 cm away from the mirror
(2) 36 cm away from the mirror
(3) 30 cm towards the mirror
(4) 36 cm towards the mirror

NEET(UG) 2019

36. Which colour of the light has the longest wavelength ?
(1) red (2) blue
(3) green (4) violet

TG: @Chalnaayaaar

37. Pick the **wrong** answer in the context with rainbow.
(1) When the light rays undergo two internal reflections in a water drop, a secondary rainbow is formed.
(2) The order of colours is reversed in the secondary rainbow.
(3) An observer can see a rainbow when his front is towards the sun.
(4) Rainbow is a combined effect of dispersion refraction and reflection sunlight.

38. Two similar thin equiconvex lenses, of focal length f each, are kept coaxially in contact with each other such that the focal length of the combination is F_1. When the space between the two lenses is filled with glycerin (which has the same refractive index ($\mu = 1.5$) as that of glass) then the equivalent focal length is F_2. The ratio $F_1 : F_2$ will be :
(1) 2 : 1 (2) 1 : 2 (3) 2 : 3 (4) 3 : 4

39. In total internal reflection when the angle of incidence is equal to the critical angle for the pair of media in contact, what will be angle of refraction?
(1) 180°
(2) 0°
(3) equal to angle of incidence
(4) 90°

NEET(UG) 2019 (Odisha)

40. An equiconvex lens has power P. It is cut into two symmetrical halves by a plane containing the principal axis. The power of one part will be:
(1) 0 (2) $\frac{P}{2}$ (3) $\frac{P}{4}$ (4) P

41. A double convex lens has focal length 25 cm. The radius of curvature of one of the surfaces is double of the other. Find the radii if the refractive index of the material of the lens is 1.5:
(1) 100 cm, 50 cm (2) 25 cm, 50 cm
(3) 18.75 cm, 37.5 cm (4) 50 cm, 100 cm

NEET(UG) 2020

42. A ray is incident at an angle of incidence i on one surface of a small angle prism (with angle of prism A) and emerges normally from the opposite surface. If the refractive index of the material of the prism is μ, then the angle of incidence is nearly equal to:
(1) $\frac{\mu A}{2}$ (2) $\frac{A}{2\mu}$ (3) $\frac{2A}{\mu}$ (4) μA

TG: @Chalnaayaaar

NEET(UG) 2020 (COVID-19)

43. A plano-convex lens of unknown material and unknown focal length is given. With the help of a spherometer we can measure the
(1) focal length of the lens
(2) radius of curvature of the curved surface
(3) aperture of the lens
(4) refractive index of the material

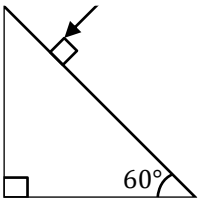
44. The power of a biconvex lens is 10 dioptre and the radius of curvature of each surface is 10 cm. Then the refractive index of the material of the lens is,
(1) $\frac{4}{3}$ (2) $\frac{9}{8}$
(3) $\frac{5}{3}$ (4) $\frac{3}{2}$

45. An object is placed on the principal axis of a concave mirror at a distance of 1.5 f (f is the focal length). The image will be at,
(1) –3 f (2) 1.5 f
(3) –1.5 f (4) 3 f

46. If the critical angle for total internal reflection from a medium to vacuum is 45°, then velocity of light in the medium is,
(1) 1.5×10^8 m/s (2) $\frac{3}{\sqrt{2}} \times 10^8$ m/s
(3) $\sqrt{2} \times 10^8$ m/s (4) 3×10^8 m/s

NEET(UG) 2021

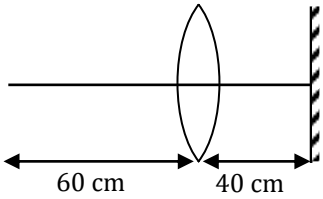
47. Find the value of the angle of emergence from the prism. Refractive index of the glass is $\sqrt{3}$.



(1) 60° (2) 30° (3) 45° (4) 90°

48. A convex lens 'A' of focal length 20 cm and a concave lens 'B' of focal length 5 cm are kept along the same axis with a distance 'd' between them. If a parallel beam of light falling on 'A' leaves 'B' as a parallel beam, then the distance 'd' in cm will be :-
(1) 25 (2) 15 (3) 50 (4) 30

49. A point object is placed at a distance of 60 cm from a convex lens of focal length 30 cm. If a plane mirror were put perpendicular to the principal axis of the lens and at a distance of 40 cm from it, the final image would be formed at a distance of :



(1) 20 cm from the lens, it would be a real image.
(2) 30 cm from the lens, it would be a real image.
(3) 30 cm from the plane mirror, it would be a virtual image.
(4) 20 cm from the plane mirror, it would be a virtual image.

NEET(UG) 2022

50. A biconvex lens has radii of curvature, 20 cm each. if the refractive index of the material of the lens is 1.5, the power of the lens is :-
(1) +20 D (2) +5D (3) infinity (4) +2D

51. Let T_1 and T_2 be the energy of an electron in the first and second excited states of hydrogen atom, respectively. According to the Bohr's model of an atom, the ratio $T_1 : T_2$ is :
(1) 4 : 1 (2) 4 : 9 (3) 9 : 4 (4) 1 : 4

52. Two transparent media A and B are separated by a plane boundary. The speed of light in those media are 1.5×10^8 m/s and 2.0×10^8 m/s, respectively. The critical angle for a ray of light for these two media is:
(1) $\sin^{-1}(0.750)$ (2) $\tan^{-1}(0.500)$
(3) $\tan^{-1}(0.750)$ (4) $\sin^{-1}(0.500)$

RE-NEET(UG) 2022

53. During a cloudy day, a primary and a secondary rainbow may be created, then the :
(1) primary rainbow is due to double internal reflection and is formed above the secondary one.
(2) primary rainbow is due to double internal reflection and is formed below the secondary one.
(3) secondary rainbow is due to double internal reflection and is formed above the primary one.
(4) secondary rainbow is due to single internal reflection and is formed above the primary one.

54. An astronomical refracting telescope is being used by an observer to observe planets in normal adjustment. The focal lengths of the objective and eye piece used in the construction of the telescope are 20 m and 2 cm respectively. Consider the following statements about the telescope :
(a) The distance between the objective and eye piece is 20.02 m
(b) The magnification of the telescope is (-) 1000
(c) The image of the planet is erect and diminished
(d) The aperture of eye piece is smaller than that of objective
The correct statements are :
(1) (a), (b) and (c)
(2) (b), (c) and (d)
(3) (c), (d) and (a)
(4) (a), (b) and (d)

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	1	4	4	2	2	4	4	2	1	2	3	3	1	3	2
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	3	2	4	4	4	4	2	1	2	1	2	4	1	2	1
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	4	4	1	2	2	1	3	2	4	4	3	4	2	4	1
Question	46	47	48	49	50	51	52	53	54						
Answer	2	1	2	4	2	3	1	3	4						

TG: @Chalnaayaaar

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Exercise - III (Analytical Questions) Master Your Understanding

1. Choose correct answer :

	Column-I		Column-II
(A)	Human Eye	(P)	Enlarged and inverted image
(B)	Simple microscope	(Q)	Enlarged and erect image
(C)	Compound microscope	(R)	Diminished and inverted image
(D)	Astronomical telescope	(S)	Diminished and erect image

Optics

(1) A → P, B → Q, C → P, D → P

(2) A → S, B → P, C → Q, D → R

(3) A → R, B → P, C → R, D → Q

(4) A → R, B → Q, C → P, D → R

2. Given blow are two statements:

Statement-1 : Magnifying power of a simple microscope is positive.

Statement-2 : Magnifying power of a compound microscope is negative.

In light of above statement choose the most appropriate answer from the options given below:

(1) Both statement I and statement II are correct.

(2) Statement I is correct and statement II is incorrect.

(3) Statement I is incorrect and statement II is correct.

(4) Both statements I and statements II are incorrect.

3. Given below are two statements: One is labelled as **Assertion (A)** and the other is labelled as **Reason (R).**

Assertion (A) : Magnifying power of a simple microscope is inversely proportional to focal length of lens in normal adjustment.

Reason (R) : Magnifying power of simple microscope can be infinite.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**.

(2) Both **(A)** and **(R)** are true and **(R)** is NOT the correct explanation of **(A)**.

(3) **(A)** is true but **(R)** is false.

(4) **(A)** is false but **(R)** is true.

4. Given below are two statements: One is labelled as **Assertion (A)** and the other is labelled as **Reason (R).**

Assertion (A) : To correct the myopia a lens of negative power must be used. It may be concave or may be combination of convex and concave.

Reason (R) : In this defect image is formed before the retina. So to correct the eyes defect some divergence on incident rays is needed.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**.

(2) Both **(A)** and **(R)** are true and **(R)** is NOT the correct explanation of **(A)**.

(3) **(A)** is true but **(R)** is false.

(4) **(A)** is false but **(R)** is true.

5. A bird is flying at the height of 12 cm from the surface of a lake and a fish is swimming at a depth of 24 cm from the surface.

(Take is $\mu = 4/3$)

	Column-A		Column-B
(A)	Distance of fish from the surface as seen by bird	(P)	16 cm
(B)	Distance of bird from the surface as seen by fish	(Q)	40 cm
(C)	Distance between fish and bird as seen by bird	(R)	18 cm
(D)	Distance between fish and bird as seen by fish	(S)	30 cm

(1) A → P, B → R, C → S, D → Q

(2) A → R, B → P, C → Q, D → S

(3) A → R, B → P, C → S, D → Q

(4) A → P, B → R, C → Q, D → S

TG: @Chalnaayaaar

6. (1) When a light ray goes from denser to rarer medium it may suffer TIR
(2) For TIR to take place angle of incidence should be greater than critical angle.
(3) Laws of reflection are not valid for TIR
(4) Intensity gets decreased during TIR
Incorrect statements are -
(1) 1 and 2
(2) 3 and 4
(3) 1, 3 and 4
(4) 1, 2, 3 and 4

7. Given below are two statements: One is labelled as **Assertion (A)** and the other is labelled as **Reason (R).**
Assertion (A) : Keeping a point object fixed,
if a plane mirror is moved, the image will also move always.
Reason (R) : In case of a plane mirror, distance of object and its image is equal from any point on the mirror.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**.
(2) Both **(A)** and **(R)** are true and **(R)** is NOT the correct explanation of **(A)**.
(3) **(A)** is true but **(R)** is false.
(4) **(A)** is false but **(R)** is true.

8. Given below are two statements: One is labelled as **Assertion (A)** and the other is labelled as **Reason (R).**
Assertion (A) : A thin lens has two principal focal lengths which may be different in magnitude.
Reason (R) : The distance of both principal focus from optical centre of thin lens depend on the two radii of curvature of the lens. Distance of both principal focus from optical centre of a lens are same only if radii of curvature of both sides of lens are same.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**.
(2) Both **(A)** and **(R)** are true and **(R)** is NOT the correct explanation of **(A)**.
(3) **(A)** is true but **(R)** is false.
(4) Both **(A)** and **(R)** are false.

9. Given below are two statements: One is labelled as **Assertion (A)** and the other is labelled as **Reason (R).**
Assertion (A) : When the upper half of a converging lens is missing, a real image formed by the lens for a real object will lack its lower half.
Reason (R) : The real image formed by a thin lens for a real object will be always erected.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**.
(2) Both **(A)** and **(R)** are true and **(R)** is NOT the correct explanation of **(A)**.
(3) **(A)** is true but **(R)** is false.
(4) Both **(A)** and **(R)** are false.

10. Given below are two statements: One is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.
Assertion (A) : A simple microscope may have different magnification for different persons.
Reason (R) : All persons must have the same near point distance of 25 cm.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**.
(2) Both **(A)** and **(R)** are true and **(R)** is NOT the correct explanation of **(A)**.
(3) **(A)** is true but **(R)** is false.
(4) **(A)** is false but **(R)** is true.

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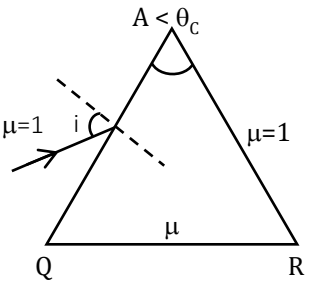
11. Column Matching :-

	Column-I		Column-II
(A)	An object is placed at a distance equal to focal length from pole before convex mirror	(P)	Magnification is ∞
(B)	An object is placed at focus before a concave mirror	(Q)	Magnification is 0.5
(C)	An object is placed at the center of curvature before a concave mirror	(R)	Magnification is (1/3)
(F)	As object is placed at a distance equal to radius of curvature before a convex mirror	(S)	Magnification is –1

(1) A → P, B → Q, C → R, D → S
(2) A → Q, B → P, C → S, D → R
(3) A → Q, B → P, C → R, D → S
(4) A → P, B → R, C → Q, D → S

12. Match the column (θ_C is the critical angle b/w prism medium and surrounding medium)

(A)		(1)	Light ray always crosses the prism for any value of i
(B)	A > 2θC	(2)	Light ray never crosses the prism for any value of i
(C)	θC < A < 2θC	(3)	Light ray may crosses the prism depends on i

Option :
(1) A→1, B→1, C→3 (2) A→3, B→2, C→1
(3) A→2, B→1, C→2 (4) A→1, B→2, C→3

13. All the following statements are correct except : (For real object)
(1) The magnification produced by a convex mirror is always less than 1.
(2) A virtual, erect, same sized image can be obtained by using only a plane mirror.
(3) A virtual, erect, magnified image can be formed by using concave mirror.
(4) A real inverted, same sized image can be formed by using a convex mirror.

14. Given below are two statements: One is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.
Assertion (A) : There is no dispersion of light refracted through a rectangular slab.
Reason (R) : Dispersion of light is the phenomenon of splitting of a beam of light into its constituent colours.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**.
(2) Both **(A)** and **(R)** are true and **(R)** is NOT the correct explanation of **(A)**.
(3) **(A)** is true but **(R)** is false.
(4) **(A)** is false but **(R)** is true.

15 Match the following :-

(A)	$\mu = \tan i$	(P)	Snell's law
(B)	$\mu = \frac{1}{\sin\theta_C}$	(Q)	Brewsters angle
(C)	$\mu = \frac{\sin i}{\sin r}$	(R)	Prism
(D)	$\mu = \frac{\sin\left(\frac{\delta_{min}+A}{2}\right)}{\sin\frac{A}{2}}$	(S)	Total internal reflection

(1) A → P, B → Q, C → R, D → S
(2) A → Q, B → P, C → S, D → R
(3) A → Q, B → S, C → P, D → R
(4) A → P, B → S, C → S, D → R

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16. The angle of a prism is 30°. The rays incident at 60° on one refracting face suffer a deviation of 30°. Then the angle of emergence is 3K°. Find the value of K.
(1) 40° (2) 20° (3) 10° (4) 0°

EXERCISE-III (Analytical Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	4	1	3	1	3	2	4	4	4	3	2	4	4	4	3
Question	16														
Answer	4														

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